

## **REMARKS**

### **INTRODUCTION:**

In accordance with the foregoing, claims 1, 2, 6, and 15-20 have been amended and claims 8 and 13 have been canceled. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-7, 10-12, and 15-20 are pending and under consideration.

### **CLAIM OBJECTIONS:**

Claims 8 and 13 are objected to under 37 CFR 1.75 (c), as being improper dependent form for failing to further limit the subject matter of a previous claim. Claims 8 and 13 have been canceled. However, the language of claims 8 and 13 is now incorporated in claims 1-2 and 15-20. The phrase "suppresses a decrease in charged electrical potential and dark decay upon repeated use" is not a limitation of intended use because it recites a property of the photoreceptor, i.e., suppressing a decrease in charged electrical potential and suppressing dark decay due to repeated use. Further, the feature, "suppresses a decrease in charged electrical potential and dark decay upon repeated use" discloses properties of the electrophotographic photoreceptor such as charged electrical potential and its lifetime. These properties constitute a limitation of the instant claims. Therefore, the claim limitation "wherein, said electrophotographic photoreceptor is an electrophotographic photoreceptor for a wet developing method that suppresses a decrease in charged electrical potential and dark decay upon repeated use" is not a recitation of an intended use and describes a property of the claimed invention.

Claim 6 is objected to under 37 CFR 1.75 (c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. The specification and claim 6 has been amended to overcome typographical errors found in Formula 10.

### **REJECTION UNDER 35 U.S.C. §112:**

Claims 8 and 13 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description. The Examiner asserted "these amended claims now contain new matter because the specification as filed does not teach that the photoreceptor suppresses a decrease in charged electrical potential." Claims 8 and 13 have been canceled. However, as noted above, the language of claims 8 and 13 is incorporated in claims 1, 2, and 15-20. Paragraph 2 is amended to correct the typographical error to: suppressing causes a decrease in charged electric potential due to repeated use. Support for this amendment to paragraph 2 is found in paragraphs 46, 48, 90 and abstract; and Tables 1 and 2. Paragraph 46 describes the photoreceptor having good images "since a decrease in the charged electrical potential of a

photoreceptor due to corona discharge is suppressed by using the antioxidants with the specific structure." In paragraph 48, "the electrophotographic photoreceptor according to the present invention produces effective images even when used repeatedly, by suppressing a decrease in charged electrical potential and dark decay." In paragraph 90, "the electrophotographic photoreceptors according to the present invention have reduced dark decay and retain high initial charging electrical potential after repeated discharging processes compared to that of the comparative example." The results are given in Tables 1 and 2.

Claims 1, 3-6, 8, 15, 17 and 19 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Independent claims 1, 15, 17 and 19 have been amended to clarify the composition of  $X_3$ .

#### **REJECTION UNDER 35 U.S.C. §102:**

Claims 1-6, 8, 10, 13, 15, and 16 are rejected under 35 U.S.C. §102(b) as being anticipated by JP 07-281456 (hereinafter – Saburo). The reasons for the rejection are set forth in the Office Action and therefore not repeated. Applicants traverse this rejection and respectfully request reconsideration.

Saburo is cited for teaching a general electrophotographic method and contains no descriptions on whether Saburo may be applied to a wet developing method. Independent claims 1, 2, 15, and 16 include the limitation, "wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorine units consisting of the following chemical Formula (1)." A feature of the electrophotographic photoreceptors of the present invention is that they can be advantageously used in wet developing methods. In wet developing methods, a liquid developer directly contacts the surface of the photoreceptors. The photoreceptors of the present invention are highly resistant to an aliphatic hydrocarbon solvent included in the liquid developer such as a polyester resin having a biphenyl fluorine unit represented by the Formula 1. Saburo fails to teach or suggest "wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorine units consisting of the following chemical Formula (1)."

#### **REJECTION UNDER 35 U.S.C. §103:**

Claims 17-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Saburo in view of Handbook of Imaging Materials, by Diamond, New York: Marcel-Dekker, Inc., pp. 145-164, 11/2001 (hereinafter – Handbook). On page 5 of the Office Action, the Examiner maintains a rejection over claims 17-20. Saburo is directed to a general electrophotographic method. The

Examiner acknowledged in the Office Action on January 25, 2005 on page 5, that Saburo “does not disclose the specifics of the process cartridge or the image forming apparatus of the instant claims. Saburo fails to teach or suggest independent claims 17-20, specifically the limitation, “wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorine units consisting of the following chemical Formula (1).” Saburo in view of the Handbook also fail to teach or suggest claims 17-20. Although the Handbook discusses the general use of using a photoreceptor to produce images, the Handbook does not teach or suggest an image forming apparatus or an electrophotographic cartridge that employs wet developing method. The Handbook would not apply to the present invention because the Handbook discusses a dry powder ink (pg. 148, lines 16-20). The present invention is related to a wet developing method. Therefore, the Handbook cannot be relied upon to cure the deficiencies of Saburo.

Neither Saburo nor the Handbook, individually or combined, recite “wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorine units consisting of the following chemical Formula (1).”

Claims 1-8, 10-13, 15, and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Katsukawa et al. (U.S. 6,187,493 – hereinafter Katsukawa) in view of Kanamuru et al. (U.S. 6,043,334 – hereinafter Kanamuru). On page 5 of the Office Action, the Examiner asserts that “the resin must contain other units not shown by the Formula 1 because the resin must be a polyester.” Independent claims 1, 2, and 16 have been amended to, “wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorine units consisting of the following chemical Formula (1).” Katsukawa shows polyester resins as binder resin having biphenyl fluorene units, but does not teach or suggest the specific antioxidants recited in the instant claims. Katsukawa describes the use of antioxidants as an additive (col. 44, lines 1-4), but is silent on the type of antioxidant used and does not teach or suggest using phenolic compounds as an antioxidant.

Katsukawa is silent on whether its polyester can be used in wet developing methods. In the present invention, a liquid developer directly contacts the surface of the photoreceptors, because they are highly resistant to an aliphatic hydrocarbon solvent included in the liquid developer by using the polyester resins having a biphenyl fluorene represented by Formula (1) (see paragraphs 93-94). Neither Katsukawa nor Kanamaru, individually or combined, teach or suggest “an electrophotographic photoreceptor for a **wet developing method**” (emphasis added).

The Examiner acknowledges on page 6 of the January 25, 2005 Office Action that Katsukawa “does not disclose the antioxidants.” Kanamuru cannot be relied on to cure the deficiencies of Katsukawa because the present invention is limited to esters. The chemical

formulas shown in Kanamuru do not anticipate Formula 1 because Katsukawa shows pyrroles (col. 45-48) as polyesters for the binder resin. Neither Katsukawa nor Kanamuru, individually or combined, recite, "wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorine units consisting of the following chemical Formula (1)."

On page 6 of the Office Action, claims 8, 13, and 17-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Yokota et al. (US Pub 2004/0009419 – hereinafter Yokota) in view of Kanamura. The Examiner has entered a new rejection for claims 8 and 13. The Examiner asserted on page 6 of the Office Action, "the priority document does not disclose claims 8 and 13 for the same reasons as given in the section 112, first paragraph, rejection above." The Certified Translation submitted on April 25, 2005, discloses the features found in claims 8 and 13. On page 1, lines 7-10 of the Certified Translation, the specification states "a single layered electrophotographic photoreceptor which makes it possible to obtain a better image by suppressing a dark decay and a decrease in charged electrical potential due to repeated use and which has an extended electrical lifetime (emphasis added). Further support is found on page 25, line 19 – page 27, line 15 and Tables 1 and 2 in the Certified Translation.

The Examiner also, asserted "the priority document does not describe the electrophotographic cartridge and image forming apparatus of claims 17-20." The priority document shows on page 7, lines 13-14 of the Certified Translation that "the present invention provides an electrophotographic device having anyone of the electrophotographic photoreceptor above mentioned." On page 29, lines 7-9, the Certified Translation states that "it is possible to manufacture more practical electrophotographic devices with the aid of the electrophotographic photoreceptor according to the present invention." Claim 9 recites in the Certified Translation, "an electrophotographic device having the electrophotographic photoreceptor according to anyone of claims 1 through 8." Therefore, the priority document does describe claims 17-20, and thus priority under section 119 is proper.

The 35 U.S.C. § 103 (a) rejection of claims 8, 13, and 17-20 of Yokota in view of Kanamura is improper because Yokota only qualifies as a 35 U.S.C. § 102 (e). Yokota only qualifies as a 35 U.S.C. § 102 (e) because it was filed on June 12, 2003, which predates our filing date of July 14, 2003 by less than one year. Because Yokota is only available as a 35 U.S.C. § 102 (e) prior art reference and had the same assignee as the instant application, Samsung Electronics Co., Ltd., at the time the invention was made, Yokota can only be used in a 35 U.S.C. § 103(c) rejection. 35 U.S.C. § 103(c) states:

Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were,

at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Yokota which qualifies as prior art only under 35 U.S.C. § 102 (e) shall not preclude patentability under 35 U.S.C. § 103 (a) where Yokota and the present invention were, at the time of invention was made subject to an obligation of assignment to the same person. Therefore, the 35 U.S.C. § 103 (a) rejection of claims 8, 13, and 17-20 of Yokota in view of Kanamura is moot.

#### **DOUBLE PATENTING:**

Claims 1-8, 10-13, and 15-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of co-pending Yokota in view of Kanamura.

The Examiner admitted that Yokota fails to teach or suggest “the presence of antioxidants” or “specify phenolic antioxidants.” In claims 1-18, Yokota claims the use of a stilbene compound as the hole transport material comprising a low-molecular compound. In the present invention, the hole transport material is a phenolic compound or antioxidants found in chemical Formula (2). Yokota does not teach or suggest the specific phenolic compounds as antioxidants. Kanamura shows pyrroles (col. 45-48) as polyesters for the binder resin as Formula 1. Neither Yokota nor Kanamura, individually or combined, recite, “wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorene units consisting of the following chemical Formula (1) in the main chain.”

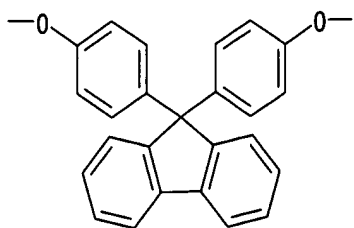
The instant claims as exemplified in claim 1, recite:

An electrophotographic photoreceptor comprising:

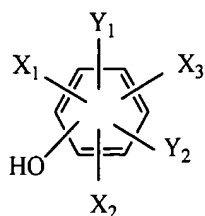
a conductive substrate; and

a photoreceptor layer formed on the substrate, wherein the photoreceptor layer comprises polyester resins as binder resin having biphenyl fluorene units consisting of the following chemical Formula (1) in the main chain, and phenolic compounds as antioxidant having the following chemical Formula (2):

Formula (1)

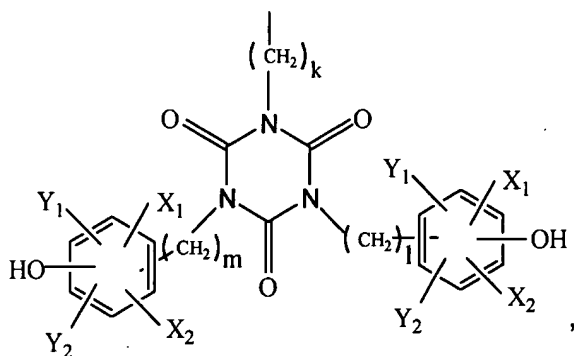
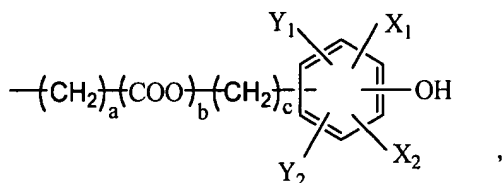


Formula (2)

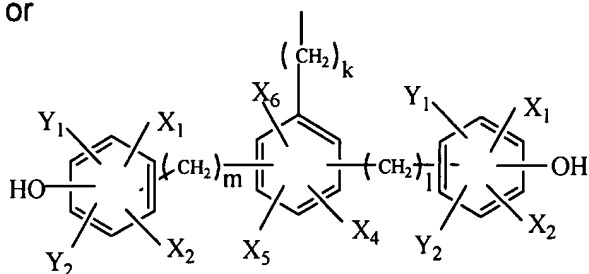


where, in Formula (1), the hydrogens in the aromatic rings are optionally substituted with substituents selected from the group consisting of halogen, C<sub>1</sub>-C<sub>20</sub> aliphatic hydrocarbon, and C<sub>5</sub>-C<sub>8</sub> cycloalkyl,

where, in Formula (2), X<sub>1</sub> and X<sub>2</sub> are independently selected from the group consisting of hydrogen and C<sub>1</sub>-C<sub>6</sub> alkyls; Y<sub>1</sub> and Y<sub>2</sub> are independently selected from the group consisting of hydrogen, methyl and ethyl; and X<sub>3</sub> is selected from the group consisting of: C<sub>1</sub>-C<sub>6</sub> alkyls,



or

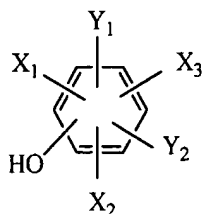


where a, c, k, l, and m, independently, are integers between 0 and 6; b is 0 or 1; X<sub>1</sub>, X<sub>2</sub>, Y<sub>1</sub> and Y<sub>2</sub> have the same meaning as above; and X<sub>4</sub>, X<sub>5</sub>, and X<sub>6</sub> are independently selected from the group consisting of hydrogen and C<sub>1</sub>-C<sub>6</sub> alkyls,

wherein, said electrophotographic photoreceptor suppresses a decrease in charged electrical potential and dark decay upon repeated use.

None of the claims in Yokota are directed to the instant claims' feature of a polyester resin having a biphenylfluorene unit represented by Formula 1 in a main chain, and phenolic

compounds as antioxidant having the following chemical Formula (2). Yokota does not recite in claims 1-18, the feature of the instant claims of Formula 2 with the specific phenolic formula of:



. Therefore, none of the claim limitations in the instant claims are disclosed in claims 1-18 of Yokota.

Withdrawal of the foregoing rejections is respectfully requested.

#### CONCLUSION:

In accordance with the foregoing, Applicants respectfully submit that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the cited art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

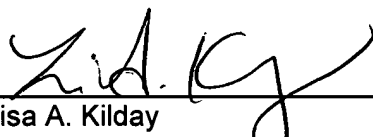
If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned agent for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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